

That which is claimed is:

1. A method of electrochemical imaging, said method comprising:
providing at least one target complex disposed on a conductive substrate;
exposing said at least one target complex to a solution of image nanoparticles;
applying a voltage to said conductive support wherein said image nanoparticles are
caused to deposit on said at least one target complex to form at least one image complex; and
repeating said application of voltage.
2. The method of claim 1 further comprising detecting said at least one image
complex.
3. The method of claim 2, wherein said detecting said at least one image complex
comprises using an imaging technique.
4. The method of claim 2, wherein said detecting said at least one image complex
comprises using an electronic measurement technique.
5. The method of claim 2, wherein said detecting said at least one image complex
comprises using a mass measurement technique.
6. The method of claim 1, wherein said target complex comprises a target
biomolecule and a target nanoparticle.
7. The method of claim 6, wherein said target nanoparticle comprises gold.
8. The method of claim 6, wherein said image nanoparticle comprises of silver.
9. The method of claim 1, wherein said voltage is in the range from about -2000
mV to about 2000 mV.

10. The method of claim 1, wherein said voltage is applied between about 5 and about 50 times.

11. The method of claim 1, wherein said providing at least one target complex comprises:

forming said at least one target complex; and
disposing the at least one target complex onto said conductive substrate.

12. The method of claim 1, wherein said providing at least one target complex comprises:

disposing a target biomolecule onto said conductive substrate; and
contacting said target biomolecule with a target nanoparticle to form said target complex on said first conductive substrate.

13. A method of determining the presence of a biomolecule, said method comprising:

providing a plurality of target complexes disposed on a conductive substrate, each said target complex comprising a target biomolecule and a target nanoparticle;
exposing said plurality of target complexes to a solution of image nanoparticles;
applying a voltage to said conductive support wherein said image nanoparticles are caused to deposit on said plurality of target complexes to form a plurality of image complexes;
and
repeating said application of voltage at least once.

14. The method of claim 13, further comprising:
detecting said plurality of image complexes;
determining whether the detected plurality of image complexes provides a sufficient image of said biomolecules; and
repeating said application of voltage at least once upon a determination that said image of said biomolecules is insufficient.

15. The method of claim 14, wherein said detecting said plurality of image

complexes comprises using an imaging technique.

16. The method of claim 14, wherein said detecting said plurality of image complexes comprises using an electronic measurement technique.

17. The method of claim 14, wherein said detecting said plurality of image complexes comprises using a mass measurement technique.

18. The method of claim 13, wherein said providing said plurality of target complexes comprises:

forming said plurality of target complexes; and
disposing said plurality of target complexes onto said conductive substrate.

19. The method of claim 13, wherein said providing said plurality of target complexes comprises:

disposing a plurality of target biomolecules onto said conductive substrate; and
contacting said plurality of target biomolecules with a plurality of target nanoparticles to form said plurality of target complexes on said first conductive substrate.

20. The method of claim 13, wherein said target nanoparticles are made of gold.

21. The method of claim 13, wherein said image nanoparticles are made of silver.

22. The method of claim 13, wherein said application of voltage comprises a voltage in the range from about -1500 mV to about 1500 mV.

23. The method of claim 13, wherein said voltage is applied between about 5 and about 50 times.

24. A method comprising:

(a) providing a plurality of target complexes disposed on a conductive substrate, each said target complex comprising a target biomolecule and a target nanoparticle;

- (b) exposing said plurality of target complexes to a solution containing a plurality of image nanoparticles;
- (c) applying a relatively low voltage to said conductive support wherein said image nanoparticles are caused to deposit on at least one of said plurality of target complexes to form at least a first nucleation point;
- (d) applying a relatively high voltage to said conductive support wherein said image nanoparticles are removed from said at least first nucleation point; and
- (e) repeating (c) and (d) as desired to cause the deposition of said image nanoparticles on said first nucleation point and on additional target complexes to cumulatively form additional nucleation points.

25. The method of claim 24, further comprising:
terminating the repetition of voltage application immediately after the application of a low voltage.

26. The method of claim 24, comprising:
terminating the application of voltage immediately after the application of a high voltage.

27. The method of claim 24, further comprising:
detecting said image nanoparticles deposited at said nucleation points.

28. An electrochemical imaging system, comprising:
a conductive substrate configured for the formation of at least one image complex thereon; and
a voltage supply having electrodes for electrical connection to said conductive substrate, wherein said voltage supply is configured to apply a voltage to said conductive substrate repeatedly between a relatively low voltage and a relatively high voltage whereby said at least one image complex is formed when image nanoparticles are exposed to at least one target complex deposited on said conductive substrate.

29. The system of claim 28, further comprising:

means for detecting said at least one image complex, said means selected from imaging equipment, electronic measurement equipment and mass measurement equipment.
a supply of target complexes.

30. A kit for electrochemical imaging of image complexes, said kit comprising:
a supply of target complexes for deposition on said conductive substrate of the system of claim 28; and
a supply of image nanoparticles configured for interaction with said supply of target complexes.